

Fire Weather Services Operation Plan for Maryland 2014

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Section I

Annual Operating Plan

This Operating Plan serves as the official document governing the interaction and relationships between the National Weather Service, and the federal, state and local natural resource and land management agencies in the state of Maryland.

Explanation of relationship between the AOP and MOU.

This Operating Plan is issued in lieu of a formal Memorandum of Understanding (MOU) between the National Weather Service, federal, state, and other agencies that rely on fire weather support. The plan will outline forecast operations and services available to users. This includes products and formats, dissemination and coordination, and the responsibilities of the partners. This Operating Plan will be the governing document for fire weather procedures and cooperation among the following agencies:

- NOAA National Weather Service
- MD Department of Natural Resources

Section II

NWS Fire Weather Policy & Philosophy

The National Weather Service Forecast Offices (WFO's Sterling, VA, Mount Holly, NJ, Pittsburgh, PA, and Wakefield, VA) will provide fire weather support in accordance with the National Weather Service Fire Weather Policy. This support will consist of daily fire weather forecasts. Spot (non-routine) forecasts, fire weather watches, and red flag warnings will be provided on an as-needed basis at any time throughout the year.

Unless otherwise specified, forecasts are made to reflect the worst probable weather in terms of fire management, within the forecast zone. For instance, the daytime forecast will attempt to depict the hottest, driest, and windiest weather that is likely to be experienced in the wildland environment of a zone from 7AM to 7PM Eastern Standard Time. On occasion, this may be different from the general public forecast which emphasizes prevailing conditions for the area.

Though the routine forecast attempts to depict a worst case fire weather scenario for a given period, it in no way reflects all the local variations in weather that can have an adverse effect on fire behavior within a zone. Fire control officers should be familiar with typical weather variations across their district or forest such as those associated with land versus sea interaction, changes in elevation, and vegetation. The impact of sea breezes or mountain/valley winds should also be recognized. A spot forecast should be requested whenever local effects are suspected of creating difficult fire management conditions.

Over mountainous terrain, weather conditions vary considerably from site to site within a county. Routine forecasts for mountainous counties will be aimed at lower elevations where the most operations are likely to occur. As a general rule, high elevations sites will have lower temperatures on the order of 5 degrees per 1,000 feet in elevation. Fire officers are urged to obtain spot forecasts whenever terrain causes significant departures from the routine forecast.

Section III

NWS Forecast Areas

WFO Sterling: All of Maryland west of the Chesapeake Bay, except Garrett County.

WFO Pittsburgh: Garrett County.

WFO Mount Holly: Cecil, Kent, Queen Annes, Caroline, Talbot counties

WFO Wakefield: Dorchester, Wicomico, Worcester, Somerset counties.

For NWS Sterling: <http://www.erh.noaa.gov/lwx/>

For NWS Mount Holly: <http://www.erh.noaa.gov/phi/>

For NWS Wakefield: <http://www.erh.noaa.gov/akq/>

For NWS Pittsburgh: <http://www.erh.noaa.gov/pbz/>

National Fire Weather Page: <http://radar.srh.noaa.gov/fire/>



WFO STERLING**(Zones/Zone #s)**

W Allegany	MDZ501
E & Central Allegany	MDZ502
Anne Arundel	MDZ014
Northern Baltimore	MDZ006
Southern Baltimore	MDZ011
Harford	MDZ007
Howard	MDZ010
Montgomery	MDZ009
Prince Georges	MDZ013
St. Mary's	MDZ017
Washington	MDZ003
Carroll	MDZ005
Charles	MDZ016
Frederick	MDZ004
Calvert	MDZ018
Baltimore City	MDZ2011

WFO Mount Holly

Cecil	MDZ008
Kent	MDZ012
Queen Anne's	MDZ015
Talbot	MDZ019
Caroline	MDZ020

WFO Wakefield

Dorchester	MDZ021
Wicomico	MDZ022
Worcester	MDZ024
Eastern Worcester	MDZ025

WFO Pittsburgh

Garret	MDZ001
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Section IV
The Fire Weather Planning Forecast
(FWF)

The fire weather planning forecast (FWF) will be issued by each Weather Forecast Office for fire weather zone in their forecast area. The forecast will be issued between 4:00 and 6:00 AM each morning and again between 2:00 and 4:00 PM each afternoon.

The morning fire weather forecast will cover specific conditions for a 36 hour period and will consist of three 12 hour periods (today, tonight, and the next day). The afternoon forecast will consist of four 12 hour periods (tonight, tomorrow, tomorrow night, and the next day). On critical weather days a headline may be included at the top of the product. The headline will be mandatory for Red Flag Warnings or Fire Weather Watches. A brief synopsis of the weather as it pertains to the forecast area will precede the forecasts. Following the three/four period forecasts, the product will also contain an extended forecast, and the NWS long range forecast for the area.

- A) Data Included in the Short Term Section of the Fire Weather Product will be broken down into several groups. Each forecast zone consists of 12 hour periods. The data included will be:
- 1) Cloud Amount
 - 2) Precipitation Type
 - 3) Chance of Precipitation
 - 4) Daytime Max Temperatures and Nighttime Minimum Temperatures (*deg F*)
also with the temperature change from 24 hours ago.
- Daytime Minimum Relative Humidity and Nighttime Max (*in percent*)
also with the humidity change from 24 hours ago.
- Surface Wind Direction & Speed (*using an 8 point compass in MPH*)
broken down to morning and afternoon during the daytime periods.
- Precipitation Amount (*in inches*)
- Precipitation Duration (*in hours*)
- Precipitation Begin and End Times
- Daytime Mixing Height (*in feet*)
- Daytime Transport Wind Direction
- Daytime Transport Wind Speed (*in miles per hour*)
- Daytime Ventilation Index (*transport wind speed x mixing height*)
- Lightning Activity Level
- Daytime Haines Index for potential fire growth
- **Surface wind:** This is a 2 minute average of the 10 meter wind (33 feet). Direction is given using an eight point compass (i.e. N, NE, E, SE, S, SW, W,

NW). Surface wind speed is in miles per hour. During the daytime periods, wind is broken down into morning and afternoon periods. For those that require 20 foot winds, the difference between 20 and 33 foot wind is typically only 10 % or less in moderate to strong winds.

- **Precipitation Duration:** The total number of hours of precipitation expected during the 12 hour period.
- **Precipitation Begin and End Times:** These are the start and end times of any expected precipitation. It does not necessarily mean that precipitation will occur continuously between these times.
- **Humidities:** The humidity values given are the relative humidity extremes expected. In the two daytime periods, they are the minimum relative humidity forecast. At night, they are the maximum value forecast.
- **Haines Index:** This index refers to the stability and dryness of the lower atmosphere. It was intended to measure the potential for fire growth with existing fires. It is calculated adding two factors. The first compares the atmospheric temperature at 950 Mb versus 850 Mb. The second figures the humidity of the atmosphere at 850 Mb. This is a daytime index. A Haines Index of:
 - 2 or 3 Indicates a very low potential for fire growth
 - 4 Indicates a low potential
 - 5 Indicates a moderate potential
 - 6 Indicates a high potential for large fire growth
 - *** A value of 5 or 6 indicates that prescribed burns may get out of control.
- **Lightning Activity Level:** The amount of lightning strikes anticipated.
 - 1 No lightning
 - 2 No lightning or a few scattered strikes
 - 3 Scattered strikes
 - 4 More numerous strikes
 - 5 Frequent lightning
- **Mixing Height:** This is defined as the atmospheric limit above which vigorous mixing does not take place. The mixing height gives the potential of the atmosphere to disperse smoke. In general, with a forecast mixing height of 1600 feet (500 meters) or less, the fire control officer should consider moving a scheduled prescribed burn to a different day. Upper air sounding data is available between 8 and 9 AM Eastern Standard Time. This data can sometimes provide a more accurate mixing height than what is issued earlier in the morning on the daily fire weather forecast. Since vigorous mixing typically occurs during the daylight hours, this value is given during the daytime periods. At night, the value falls to the inversion height.

- **Transport Wind:** Defined as the average wind vector from the surface to the mixing height (more plainly, the direction and speed of the wind that will carry the smoke). Direction of the transport wind (where the wind is blowing from) and speed will be given. This is now given in miles per hour. To convert to meters per second, multiply it by 0.45 (roughly divide it in half). Since the mixing height used to compute this is a daytime index, this is also given for day periods only.
- **Ventilation Rate:** This is a combination of the Transport Wind (mph) and the Mixing Height (ft). It is computed by multiplying the two values. It measures volume of smoke moved by dispersion. Since the mixing height used to compute this is a daytime index, ventilation rate is also given for the daytime periods only.

B) The Extended Forecast

At the end of the daily fire weather forecast, the extended forecasts are given. For the mid range, these will include cloud cover, precipitation, and temperatures. For the long range, this will include deviations from normal for temperatures and precipitation.



Section V

Spot (Non-Routine) Forecasts

Site Specific Forecasts (Spot Forecasts)

Criteria

Spot forecasts are special, non-routine forecasts prepared upon request of any federal agency, or state agency when there is some aspect of federal resources involved and/or interagency protection agreements currently exist. Site specific weather forecasts are for: 1) controlling the spread of wildfire; 2) planning and managing prescribed fires; or 3) other specialized forest management activities. In the event of an emergency which threatens life and/or property, spot forecasts can also be provided to any federal, state, or local agency. Spot forecast requests for wildfires and hazardous material emergencies are considered high priority, and can be obtained at any time. Spot forecasts may be obtained for prescribed burns; however, the response may be delayed due to higher priority responsibilities of the forecaster on duty.

Procedures for Requesting a Spot Forecast

Spot forecasts will be prepared when requested by a user agency. Federal, state and local agencies may request spot forecasts in support of wildfire suppression or other emergencies where lives and/or property may be threatened. Due to the detailed and specific nature of this forecast product, it is imperative that the user provide the forecaster with necessary and sufficient information so that a reliable forecast can be prepared.

Requests for spot forecasts should be made using the web based spot forecast request form. This form, along with instructions on how to use it, is available on the local NWS fire weather web pages. The web based spot forecast request form should be filled out as completely as possible (required parameters are listed in red) by the user agency prior to submitting the request.

Use Latitude/Longitude for your location, and this should be entered in either decimal degrees, or degrees/minutes/seconds. If you are using decimal degrees enter as standard (e.g. 38.46, -78.65). If degrees/minutes/seconds, use a second decimal (e.g. 37.27.36, 78.39.00), or leave a space between each number (e.g. 37 27 36, 78 39 00).

Direct links to the spot monitor page for each NWS office:

<http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=phi> **NWS Mount Holly**

<http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=lwx> **NWS Sterling**

<http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=pbz> **NWS Pittsburgh**

<http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=akq> **NWS Wakefield**

In times when internet access is hindered or not possible, spot forecasts may be requested and disseminated via fax or phone. If faxing a request, users should use the Fire Weather Special Forecast Request Form, WS Form D-1. A printable version of this form is located here <http://www.srh.noaa.gov/media/hun/D1Form-SpotFcst.pdf>. Section I of WS Form D-1 should be filled out as completely as possible by the user agency prior to submitting the request by the fax to the forecast office. If the request is made by phone, all information in Section I should be provided to the forecast office.

While there is no dedicated fire weather forecaster, the forecast office will give a high priority to spot forecasts in the absence of weather phenomena in the CWA that pose a threat to life



and property. To ensure that the request for a spot forecast is handled properly and appropriately, users should adhere to the following guide.

- 1) Allow adequate time for the forecaster to prepare the forecast. This will normally be about 30 minutes. On particularly busy fire weather days, spot forecasts will be handled on a first-come, first-serve basis, with wildfires or other life threatening events taking the highest priority.
- 2) Provide as much on-site or near-site weather information as possible. At a minimum, the user should provide at least one observation within an hour of the request. This observation must contain the following: location of the observation; elevation at the observation site; time of the observation; wind direction, speed, and level (eye or 20 foot); dry and wet bulb temperatures; any remarks about the state of the weather, particularly anything that may affect fire behavior. If possible, include some observations from the previous day that might give the forecaster an indication of daily trends.
- 3) As much as possible, specify the time period for which the forecast is needed.
- 4) As much as possible, specify the weather elements of most importance for which a forecast is needed, and/or critical values of these elements.
- 5) Provide a contact point name and phone number where the forecaster can call back, if necessary. (Also include a fax number for returning completed forecasts if the web based spot forecast form is not used).
- 6) In order to receive prompt attention for a fax request, please phone the office to let the forecaster know the request is on the way.
- 7) Natural resource agency personnel should contact the NWS forecast office for a spot update if the forecast conditions appear unrepresentative of the actual weather conditions. Whenever possible, users should provide feedback, positive or negative, to the NWS forecast office concerning the performance of the spot forecast during or shortly after an event. This will assist forecasters in subsequent forecasts for the same or similar conditions.



Section VI

National Fire Danger Rating System (NDFRS) Forecasts

NFDRS forecasts will be issued for any predetermined site from which an NFDRS observation is received, provided the observation is received on time, complete, and deemed accurate. The natural resource agencies will determine which observation sites (normally RAWs sites) will be NFDRS sites. Initiation of NFDRS forecasts for a new site will be coordinated with the NWS and the agency requesting new NFDRS service will provide the NWS with information about the site location. Forecasts will not be provided for sites with bad data. The NWS will notify the owner agency when bad data is received from a RAWs station.

MARYLAND NFDRS RAWs

WIMS ID	NAME	COUNTY	ELEV.	LAT.	LONG.	OWNER	WFO
180201	Green Ridge	Allegany	1,090	39.69	78.42	MFS	Sterling
180302	Catoctin Mt	Frederick	1,485	39.65	77.49	NPS	Sterling
180303	Antietam NB	Washington	460	39.49	77.75	NPS	Sterling
180701	Susquehanna	Harford	300	39.61	76.16	MFS	Sterling
181510	Cedarville	Prince Geo.	200	38.65	76.81	MFS	Sterling
182101	Tuckahoe	Caroline	50	38.94	75.94	MFS	Mt. Holly
182002	Blackwater	Dorchester	8	38.44	76.09	FWS	Wakefield
182201	Powellville	Wicomico	16	38.36	75.43	MFS	Wakefield
180335	Assateague	Worcester	12	38.08	75.20	NPS	Wakefield



Section VII

Fire Weather Watches/Red Flag Warnings/Special Weather Statements

(WBCRFWLWX)(WBCSPSLWX)

Three specific conditions must be met (or expected to be met) concurrently for a Red Flag Warning (or Fire Weather Watch) to be issued. These conditions are as follows:

- ✓ Ten hour fuels must be less than or equal to 8%
- ✓ Sustained surface winds 20 MPH or greater
- ✓ Relative Humidity below 30%

NWS offices Sterling, Wakefield, Pittsburgh, and Mount Holly will contact the Maryland Department of Natural Resources Forest Service to obtain information about fuel moisture before issuing any headlines. Monte Mitchell will be the lead contact, but the WFO's will use the Maryland Forest Service Wildfire Schedule to contact the State Duty Officer assigned daily. Each WFO will receive the schedule of contact information for the State Duty Officer on a monthly basis.

If WFO's determine that the relative humidity/wind criteria will be met, AND after coordination it is determined that the Fuel Moisture criteria will be met, WFO's will issue a FIRE WEATHER WATCH or RED FLAG WARNING. A SPECIAL WEATHER STATEMENT may be issued when it is determined that all elements (wind speed, relative humidity, and fuel moisture) will be close to criteria for Red Flag Conditions. Special Weather Statements will also be coordinated with the Maryland Department of Natural Resources before being issued.

If a FIRE WEATHER WATCH or RED FLAG WARNING is issued, WFO's will include a HEADLINE in the daily fire weather forecast as well as any spot forecasts that are issued during the event. Also a separate product called an RFW will be issued. This separate product will more specifically state the risks and what weather conditions are producing them.

A **"FIRE WEATHER WATCH"** is issued to alert the users to the possible development of a Red Flag event (as defined by the 3 criteria above) in the near future. This is typically issued within 12 to 48 hours in advance of the onset of possible warning conditions. .

A **"RED FLAG WARNING"** is issued to warn the users of an impending or on-going Red Flag event (as defined by the 3 criteria above). A Red Flag Warning will typically be issued within 12 hours of the onset of expected warning conditions. However, when confidence is high a Red Flag Warning may be issued up to 24 hours before the onset of expected warning conditions.

A **"SPECIAL WEATHER STATEMENT"** is issued during situations where near critical (EX: Wind, RH, and Fuel Moisture are near RFW Criteria) Fire Weather Conditions are expected. A Special Weather Statement may be issued. All Special Weather Statements will be coordinated with the Maryland DNR.

Section VIII
NOAA Weather Radio

NOAA Weather Radio continuously broadcasts weather information on a special broadcast band. NOAA Weather Radio transmitters that cover areas within Maryland area as follows:

Following are NWS Sterling's NOAA Weather Radios and their assigned frequencies:

<u>Location</u>	<u>Station</u>	<u>Frequency</u>
Pikesville, MD	KEC-83	162.400 MHz
Hagerstown, MD	WXM-42	162.475 MHz
Frostburg, MD	WXM-43	162.425 MHz
Washington DC	WNG-736	162.450 MHz
Manassas	KHB-36	162.55 MHz

NWS Wakefield

<u>Location</u>	<u>Station</u>	<u>Frequency</u>
Salisbury, MD	KEC-92	162.475 MHz

Section IX
Specialized Fire Weather Services &
On-Site Meteorological Support

Onsite Support

National Weather Service Sterling is offering onsite meteorological support for enhanced fire threats depending on resource availability. Support must be requested by the agencies with as much advanced notice as possible. If Sterling cannot provide onsite support due to resource issues, then offsite support will be provided (via phone). Support from the Sterling office will only be for counties located within the Sterling Offices County Warning Area. For counties outside Sterling's County Warning Area, any support must be coordinated with the appropriate office (Pittsburgh, Wakefield, or Mount Holly).

Fire Weather Training

NWS Fire Weather Meteorologists are available to assist in fire control agencies with training at fire behavior school and other weather related courses. Requests for assistance should be forwarded to the Fire Weather Focal Point or MIC of the WFO.

Other Specialized Services

Other services include weather station visitations requested by user agencies, weather observer training and course development work. These activities would typically be conducted at user agency facilities.

Information for Incident Meteorologists can be found at the following link:

http://www.fs.fed.us/fire/ibp/master_ia_wildland_fire_mgt.pdf

APPENDIX A

NWS OFFICES and Contacts

Sterling NWS: Andrew Woodcock: *Fire Weather Focal Point (FWFP)*
andrew.woodcock@noaa.gov
James Lee *Meteorologist in Charge (MIC)*
Christopher Strong: *Warning Coordination Meteorologist (WCM)*
43858 Weather Service Road
Sterling, VA 20166
(703) 996-2201

Wakefield NWS: Jon McGee: *Fire Weather Focal Point (FWFP)*
Jonathan.Mcgee@noaa.gov
Jeff Orrock: *Meteorologist in Charge (MIC)*
Bill Sammler: *Warning Coordination Meteorologist (WCM)*
10009 General Mahone Hwy.
Wakefield, VA 23888-2742
(757) 899-4200

Pittsburgh NWS: Rihaan Gangat: *Fire Weather Focal Point (FWFP)*
Rihaan.Gangat@noaa.gov
Fred McMullen: *Warning Coordination Meteorologist (WCM)/Acting Meteorologist in Charge*
192 Shafer Rd.
Moon Township, PA 15108
(412) 262-1591

Mt. Holly NWS: Lee Robertson: *Fire Weather Focal Point (FWFP)*
Lee.Robertson@noaa.gov
Gary Szatkowski: *Meteorologist in Charge (MIC)*
Joe Miketta: *Warning Coordination Meteorologist (WCM)*
732 Woodlane Rd.
Mt. Holly, NJ 08060
(609) 261-6600

Eastern Region HQ: Harvey Thurm: *Program Manager*
Harvey.Thurm@noaa.gov
Airport Corporate Center
630 Johnson Ave.
Bohemia, NY 11716
(631) 244-0124

NWS Leader: Heath Hockenberry, *Program Leader*
Heath.Hockenberry@noaa.gov
National Interagency Fire Center
3833 S. Development Ave.
Boise, ID 83705
(208) 334-9862 (office) (208) 869-2994 (cell)

APPENDIX B

USER CONTACTS

MARYLAND

See Maryland Forest Service Wildfire Schedule for daily assigned State Duty Officer Contact. Schedule is issued on a monthly basis and sent to WFO.

DNR Forest Service Monte Mitchell: *State Fire Supervisor*
HEADQUARTERS mmitchell@dnr.state.md.us
Maryland DNR Forest Service
580 Taylor Ave E-1
Annapolis, MD 21401
(410) 260-8503 Office
(410) 533-8747 Cell

DNR Forest Service Richard Lillard: *Fire Manager*
WESTERN rlillard@dnr.state.md.us
Maryland DNR Forest Service
28700 Headquarters Drive NE
Flintstone, MD 21530
(301) 478-2976 Office
(301) 988-9837 Cell

DNR Forest Service Chris Robertson: *Fire Manager*
EASTERN crobertson@dnr.state.md.us
Maryland DNR Forest Service
4329 Golden Hill Road
Church Creek, MD 21622
(410) 228-1861 Office
(410) 534-6884 Cell

Appendix C (SAMPLE PRODUCTS)

FIRE WEATHER PLANNING FORECAST

MDZ004>007-242115-

FREDERICK MD-CARROLL-NORTHERN BALTIMORE-HARFORD-
INCLUDING THE CITIES OF...FREDERICK...WESTMINSTER
551 AM EST TUE FEB 24 2009

	TODAY	TONIGHT	WED
CLOUD COVER	MCLEAR	MCLEAR	PCLDY
PRECIP TYPE	NONE	NONE	NONE
CHANCE PRECIP (%)	0	0	0
MX/MN TEMP (24H TREND)	40 (+3)	17 (-2)	49
MX/MN RH% (24H TREND)	24 (-6)	59 (+2)	27
AM WIND (MPH)	NW 12		LGT/VAR
PM WIND (MPH)	NW 9	LGT/VAR	S 9
PRECIP AMOUNT	0.00	0.00	0.00
PRECIP DURATION			
PRECIP BEGIN			
PRECIP END			
MIXING HGT (FT-AGL)	4290		3990
TRANSPORT WND (MPH)	NW 14		S 12
VENT RATE (KT-FT)	51860		38500
LAL	1	1	1
HAINES INDEX	4	4	4

REMARKS...NONE.

.FORECAST FOR DAYS 3 THROUGH 7...

.THURSDAY...MOSTLY CLOUDY. LOWS IN THE LOWER 30S. HIGHS IN THE
UPPER 50S. SOUTH WINDS 10 TO 15 MPH.

.FRIDAY...CLOUDY WITH A CHANCE OF RAIN SHOWERS. LOWS AROUND 40.
HIGHS IN THE MID 50S. WEST WINDS 15 TO 20 MPH.

.SATURDAY...MOSTLY CLOUDY. LOWS IN THE LOWER 30S. HIGHS IN THE
MID 40S. NORTH WINDS 15 TO 20 MPH.

.SUNDAY...MOSTLY CLOUDY. LOWS IN THE MID 20S. HIGHS IN THE LOWER
40S. NORTHWEST WINDS 10 TO 15 MPH.

.MONDAY...PARTLY CLOUDY. LOWS IN THE LOWER 20S. HIGHS IN THE MID
40S. WEST WINDS 10 TO 15 MPH.

.OUTLOOK 8 TO 14 DAYS...

TEMPERATURES NEAR NORMAL. PRECIPITATION ABOVE NORMAL.

NFDRS Forecast (FWM)

WBCFWMLWX

TTAA00 KWBC DDHHMM

FCST,180201,101113,13,2,62,45,1,2,SW,18,,71,55,90,40,3,1,N

Specifically, here is what's in the product WBCFWMWBC:

- 1) FCST = Tells the NFDRS the following is a forecast.
- 2) xxxxxx = Six digit station number. Initially, WBC will issue forecasts only for these sites:

- 180201 – Green Ridge, MD (Allegany County)

- 3) Tomorrow's date (e.g., 101113 is November 13th, 2010)
- 4) Time of forecast (e.g., 13 = 1300 Local Time = 1 PM)
- 5) A one digit code for weather forecast at time of observation 1300 LOCAL (1PM) tomorrow. The following are valid codes:

0 = clear
1 = scattered clouds
2 = broken clouds
3 = overcast
4 = fog
5 = drizzle
6 = rain
7 = snow, sleet, freezing rain
8 = showers over or in sight of station
9 = thunderstorms

- 6) Temperature forecast at 1pm tomorrow (degrees F)
- 7) Humidity forecast at 1pm tomorrow (0-100 percent)
- 8) Lightning activity from 1pm today through midnight tonight. See following note.
- 9) Lightning activity from midnight tonight to midnight the upcoming (next) day. See following note.

NOTE ON LIGHTNING ACTIVITY ENTRIES 8 and 9:

The codes really have more to do with areal coverage than anything. Here is basically the breakdown:

- 1) No lightning forecast.
- 2) Isolated thunderstorms (10 percent areal coverage).
- 3) Widely scattered thunderstorms (10-20 percent coverage).
- 4) Scattered thunderstorms (30-40 percent areal coverage).
- 5) Numerous thunderstorms (>50 percent coverage). Frequent lightning potential.
- 6) Frequent lightning from "dry" thunderstorms (we will likely never use this here at WBC).

- 10) Wind direction forecast for 1pm tomorrow (2 letter XX format, use ordinal compass points, e.g., S, SW, NE).
- 11) Wind speed (mph) forecast for 1pm tomorrow.
- 12) MISSING ELEMENT for fuel moisture - LEAVE BLANK (fire officials compute this).
- 13) High temperature forecast (deg F) next 24 hours (occurring either today or tomorrow).
- 14) Low temperature forecast (deg F) next 24 hours (occurring either today or tomorrow).
- 15) Humidity maximum (%) over next 24 hours (1pm today-1pm tomorrow).
- 16) Humidity minimum (%) over next 24 hours (1pm today-1pm tomorrow).
- 17) Precipitation duration (in hours) through 5am the next morning.
- 18) Precipitation duration (in hours) 5am to 1pm the next day.
- 19) Y or N - to indicate a snow pack or soaked ground.



Spot Forecast

.DISCUSSION...

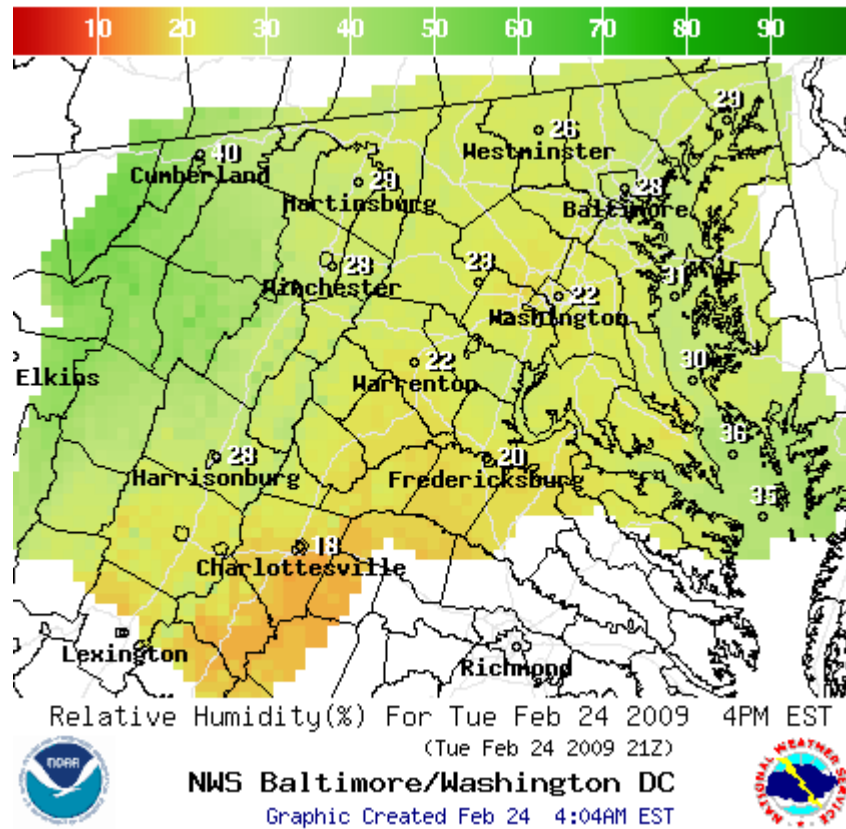
HIGH PRESSURE WILL BUILD IN FROM THE WEST TODAY. DRY CONDITIONS ARE EXPECTED. MINIMUM RELATIVE HUMIDITY WILL BE AROUND 35 TO 40 PERCENT. DRY CONDITIONS WILL PERSIST FOR SUNDAY THROUGH THE MIDDLE PORTION OF NEXT WEEK.

.TODAY...

SKY/WEATHER.....PARTLY SUNNY (55-65 PERCENT).
MAX TEMPERATURE.....AROUND 48.
MIN HUMIDITY.....37 PERCENT.
WIND (20 FT).....LIGHT AND VARIABLE WINDS...BECOMING NORTHWEST 5
TO 8 MPH IN THE LATE MORNING AND AFTERNOON.
CWR.....10 PERCENT.
MIXING HEIGHT.....500-2200 FT AGL...INCREASING TO 3800-5300 FT
AGL LATE IN THE MORNING...THEN INCREASING TO
6500-8000 FT AGL IN THE AFTERNOON...DECREASING
TO 6000 FT AGL LATE.
TRANSPORT WINDS.....NORTHWEST 13 TO 15 MPH.
EYE LEVEL WINDS.....LIGHT AND VARIABLE WINDS...BECOMING NORTHWEST 5
TO 8 MPH IN THE LATE MORNING AND AFTERNOON.

TIME (EDT)	7 AM	9 AM	11 AM	1 PM	3 PM	5 PM
SKY (%).....66	68	57	58	57	52	
WEATHER COV.....						
WEATHER TYPE....NONE	NONE	NONE	NONE	NONE	NONE	
TEMP.....37	39	43	46	47	45	
RH.....76	65	50	43	38	39	
20 FT WIND.....NW 2	N 3	N 5	N 5	NW 6	NW 6	
20 FT WIND GUST.5	5	10	10	15	15	
EYE LEVEL WIND..NW 2	N 2	N 4	N 4	NW 4	NW 5	
EYE LEVEL WIND..5	5	10	10	15	15	
CWR.....0	0	0	0	10	10	

GRAPHICAL FIRE WEATHER FORECAST



FIRE WEATHER WATCH (Example)

...FIRE WEATHER WATCH IN EFFECT FROM MONDAY MORNING THROUGH MONDAY AFTERNOON...

- **WIND**...WEST 20 TO 25 MPH
- **RELATIVE HUMIDITY**...MINIMUM RELATIVE HUMIDITY WILL BE BETWEEN 15 AND 20 PERCENT.
- **FUEL MOISTURE**...BETWEEN 5 AND 6 PERCENT.

A FIRE WEATHER WATCH MEANS THAT CRITICAL FIRE WEATHER CONDITIONS ARE FORECAST TO OCCUR. LISTEN FOR LATER FORECASTS AND POSSIBLE RED FLAG WARNINGS.

RED FLAG WARNING (Example)

...RED FLAG WARNING IN EFFECT UNTIL 6 PM EDT MONDAY...

- **WINDS**...WEST 20 TO 25 MPH
- **RELATIVE HUMIDITY**...MINIMUM RELATIVE HUMIDITY WILL BE BETWEEN 15 AND 20 PERCENT.
- **FUEL MOISTURE**...BETWEEN 5 AND 6 PERCENT.

A RED FLAG WARNING MEANS THAT CRITICAL FIRE WEATHER CONDITIONS ARE EITHER OCCURRING NOW...OR WILL SHORTLY. A COMBINATION OF STRONG WINDS...LOW RELATIVE HUMIDITY...AND WARM TEMPERATURES WILL CREATE EXPLOSIVE FIRE GROWTH POTENTIAL.

SPECIAL WEATHER STATEMENT (Example)

...ENHANCED FIRE THREAT THIS AFTERNOON AND EARLY EVENING...

NORTHWESTERLY WINDS OF AROUND 15 MPH WITH GUSTS OF 25 TO 30 MPH WILL DEVELOP THIS MORNING ACROSS THE REGION AND WILL BE ACCOMPANIED BY A DRY LOW-LEVEL AIRMASS. WITH DEAD FUEL MOISTURE REMAINING AT 7 TO 8 PERCENT TODAY AND MINIMUM AFTERNOON RELATIVE HUMIDITIES OF 30 TO 35 PERCENT EXPECTED...THERE IS AN ENHANCED THREAT FOR THE SPREAD OF FIRES THIS AFTERNOON. OPEN BURNING IS STRONGLY DISCOURAGED TODAY.

